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Continued Expansion Shown In Federal Airways System; 30,913 Miles in Operation

Facilities Constructed For Nine New Routes Totaling 2,428 Miles

Under the stimulus of national defense, and despite the difficulties imposed in some cases by shortages of labor and supplies, the Civil Aeronautics Administration continued its rapid expansion of the Federal Airways System during the fiscal year 1941.

As of July 1, 1941, the total mileage of lighted, operating airways in the United States had risen to 30,913 miles. There were 1,945 miles of airways under construction and 921 miles under survey.

Other indications of the progress made in this direction are the following figures for air navigation facilities in operation as of July 1: 2,276 airway beacons, 280 intermediate landing fields, 29 lighted airports maintained by the C. A. A., 114 full-power radio range, communication and broadcast stations, 139 medium-power radio range and communication stations, 39 low-power radio range and communication stations, 38 non-directional radio marker beacons, 118 ultra-high-frequency fan markers, 2 modified "Z" type markers.

Over a network of 13,292 miles of tele-type wires were transmitted instructions and information needed for the orderly direction of airways traffic from 133

traffic-control stations. Invaluable weather information was supplied from 414 weather-reporting stations, with a teletype mileage of 29,422 miles.

By the end of the fiscal year construction was substantially completed on the installation of air navigation facilities on the following new routes, totaling 2,428 miles: Cheyenne-Huron, Dayton-Toledo, Detroit-Sault Ste. Marie, Los Angeles-San Francisco Coastal, Kansas City-Des Moines, Norfolk-Washington, Pueblo-Wichita, Tallahassee-Atlanta, Wilkes-Barre-Syracuse. Included on these routes were 9 intermediate landing fields, 4 lighted airports, 8 radio range and communication facilities, 7 weather-reporting and communication stations, and 22 revolving beacons.

Radio Stations Added

An important part of the expansion program was the construction of 26 additional radio range and communication stations to meet the need of radio range, communication and weather-reporting service for new operations and to extend these services for existing operations. Of these new facilities, 16 are in operation and the others are being commissioned as soon as radio equipment is available. Following are the locations of these stations:

Maui, T. H. (A) San Francisco, Calif. (L)
Pueblo, Colo. (A) Calif. (L)
Duluth, Minn. (A) St. Joseph, Mo.
Evansville, Ind. (A) (L)

Blackstone, Va.	Saginaw, Mich.
(L)	(L)
Long Beach, Calif. (L)	Walla Walla, Wash. (L)
Harvey, Ill. (L)	Providence, R. I. (L)
Iowa City, Iowa (L)	Yakima, Wash. (L)
	Madison, Wis. (L)

(See AIRWAYS, page 225)

Report Shows Miles Per Fatal Accident For Private Flying

The number of miles flown per fatal accident in private flying operations was 1,269,231 in 1940 as against 916,846 in 1939, according to a statistical analysis prepared by the Civil Aeronautics Administration.

While the total number of accidents in private flying increased from 2,175 in 1939 to 3,446 in 1940, the number of miles flown rose from 177,868,157 in 1939 to 264,000,000 in 1940.

In 208 fatal accidents during 1940 there were 330 fatalities. This compares with 314 fatalities in 1939 fatal accidents during 1939. Considering the great increase in the total number of miles flown, this indicates a favorable gain in the relative safety factor in private flying.

The passenger fatalities in 1940 declined to a total of 124, compared with 139 in 1939. The miles flown per passenger fatality in 1940 were 2,129,032; a significant increase over the 1939 figure of 1,279,627. Miles flown per fatality, including all categories, were 800,000 in 1940, as against 566,459 in the previous year.

Subsequent investigation revealed that analysis appears in this issue, starting on page 220.

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CA Manual 18 Now Available

When ordering these publications, send remittance by postal money order, express order, coupons, or check to the Superintendent of Documents, Government Printing Office, Washington, D. C. Always give title, issuing office, or classification number when listed.

Civil Aeronautics Manual 18, MAINTENANCE, REPAIR, AND ALTERATION OF CERTIFIED AIRCRAFT AND OF AIRCRAFT ENGINES, PROPELLERS, AND INSTRUMENTS, is now available. Copies may be obtained from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

The new manual, amended to June 1, 1941, explains and interprets Part 18 of the Civil Air Regulations. It will be revised from time to time as equally acceptable methods or the need for additional explanations are brought to the attention of the Administrator of Civil Aeronautics.

- Keep 'Em Flying -

Aeronautical Legislation Pending

Listed below are recent measures which are now pending before Congress. A complete list of all proposed legislation appeared in Civil Aeronautics Journal, volume 2, No. 11, dated June 1, 1941, and subsequent issues. The compilation here brings this up to date.

H. R. 5476—AVIATION EDUCATION (Randolph); a bill to provide aviation education in the senior high schools of the District of Columbia; referred to the Committee on the District of Columbia.
 S. 1821—COMPENSATION FOR THE USE OF PRIVATELY OWNED PLANES (Hill); a bill to amend the Act of February 14, 1931, as amended, so as to permit the compensation on a mileage basis of civilian officers or employees for the use of privately owned airplanes while traveling on official business; referred to the Committee on Expenditures in the Executive Departments.
 S. 1835—CONSTRUCTION OF ROADS NEEDED FOR NATIONAL DEFENSE (Hayden); a bill to replace the bill S. 1580, DEFENSE HIGHWAY ACT OF 1941, which was rejected by the House after veto by the President.
 S. 1845—BOUNDARY LINE BETWEEN D. C. AND VIRGINIA (McCartan); a bill to establish a boundary line between the District of Columbia and the Commonwealth of Virginia in order to determine jurisdiction over Washington National Airport.

Legislative Action

S. 1480—The bill to amend the act entitled "An Act to Authorize the Leasing of Public Lands for Use as Public Aviation Fields" was passed by House August 4, 1941. The amendment increases the limitation in original bill from "not to exceed 610 acres in area" to "not to exceed 2,560 acres in area."
 H. R. 3537—Conference report striking out the competitive bidding feature of bill providing for construction of lighter-than-air facilities for Navy Department was agreed to by House on August 6, 1941.
 H. R. 5412—FIRST SUPPLEMENTAL APPROPRIATION BILL FOR NATIONAL DEFENSE, 1942; passed by Senate on August 14, 1941, with amendments providing \$1,100,000 additional for the maintenance and operation of air navigation facilities, \$5,586,000 additional for the establishment of air navigation facilities, and \$5,500,000 additional for the establishment of landing areas; conference with House requested and conferees appointed.

Toward Safer Flight

An important activity of the Civil Aeronautics Administration in the interest of safety is its continuing program to achieve adequate zoning of areas around airports.

The significance of this factor in commercial and civil aviation was stressed in the recent preliminary report of the House of Representatives committee investigating air accidents. The report pointed out that surrounding nearly all airports is privately owned land on which may be erected at any time structures of such height as to impair or destroy the safety and usefulness of the landing fields. It concluded that the solution of this problem is proper zoning legislation by state and local governing bodies.

The C. A. A. has long been conducting a program of promotion and education to prevent obstruction of aerial approaches to public airports through just such zoning of the adjacent property. Particular attention is given to the preventive and precautionary aspects of the program. Not only have states been asked to pass suitable zoning laws, but for the guidance and convenience of state legislatures, as well as for effective standardization, a Model Airport Zoning Act has been prepared, enabling municipalities and other political subdivisions to take the necessary action. A drawing illustrating the C. A. A. approach recommendations also has been prepared.

C. A. A. field men are constantly in touch with local authorities, advising them about the needs of airport planning, construction, and installation of facilities. Where an airport is built or improved with C. A. A. funds, there is a definite agreement with the political subdivision sponsoring the project, which covers the question of zoning. And where an airport project is operated by some other Federal agency or even by private interests, C. A. A. representatives are often consulted or make suggestions regarding zoning.

Recently a field representative learned of the contemplated erection of a water tank near an important municipal airport now under construction. He investigated and found that it would constitute an approach obstruction, and thereupon called the city's attention to its agreement with the C. A. A. to prevent the erection of such obstructions to the extent possible within its powers. Fortunately, it hap-

New York Stops Allowed Canadian Colonial

The Civil Aeronautics Board has granted Canadian Colonial Airways, Inc., an amendment to its certificate to engage in air transportation from New York, N. Y., intermediate points, Albany, N. Y., Glens Falls, N. Y., Burlington, Vt., and the terminal point Montreal, Canada, during the period from June 1 to September 30 inclusive of each year. This gives service for the first time to Glens Falls, as well as permanent right to serve Burlington, which has heretofore been serviced through a special order.

The Board further amended Canadian Colonial's certificate to permit them to begin or terminate trips at points short of terminal points. The application to authorize air transportation to and from Lake Placid, N. Y., was denied.

The certificate, as amended, was approved by the President of the United States.

Board Sets Mail Rate For Northwest Route

The Civil Aeronautics Board has issued an order setting the rate of compensation for the transportation of mail over route 45 of Northwest Airlines' Inc., St. Paul-Minneapolis to Duluth, Minn.

The Board found that a fair and reasonable base rate is 25 cents per airplane mile for the first 300 pounds, plus 2.5 percent of this amount for each additional 25 pounds, computed at the end of each calendar month on the basis of the average mail load carried. The Board also made the rate effective from June 1, 1940, the date of inauguration of service over the route.

- Keep 'Em Flying -

pens in this case that the state has passed an act based upon the C. A. A. model zoning act, and it therefore appears that this threat to the airport will be successfully countered.

The C. A. A.'s legislative recommendations have been adopted by a number of states, and some states have passed zoning laws that include the essential provisions of the C. A. A. model. A great many cities too have passed ordinances which comply with C. A. A. recommendations regarding zoning around airports. In cases where there is no covering statute or an unsatisfactory one, the C. A. A. continues its efforts to have appropriate uniform laws passed.

Air Transportation

Pan American Routes Approved by Board

The Civil Aeronautics Board has issued certificates to Pan American Airways, Inc., in connection with an order of December 31, 1940, approving the mergers of Panama Airways, Inc., and Pacific Alaska Airways, Inc., into Pan American Airways, Inc. These certificates entitle Pan American to cover the routes presently certificated to the merged companies.

The Board issued a certificate, effective May 5, 1941, of public convenience and necessity to Pan American Airways, Inc., authorizing it, subject to provisions of such certificate, to engage in air transportation with respect to persons, property and mail between the terminal point, Juneau, Alaska, and the terminal point, Whitehorse, Yukon Territory, A'saska; and between the terminal point, Fairbanks, Alaska, and Whitehorse. A certificate effective May 5, 1941, was also issued authorizing Pan American to engage in air transportation between Seattle, Wash., the intermediate point Ketchikan, Alaska, and the terminal point, Juneau, Alaska. The route covered by Panama Airways, Inc., between Cristobal, Canal Zone, and Balboa, Canal Zone, also permits Pan American to engage in air transportation with respect to persons and property, excluding mail. This certificate is effective as of April 30, 1941.

Pilot's Certificate Suspended 15 Days

The Civil Aeronautics Board has issued an order suspending for 15 days the air line transport pilot certificate of Herbert W. Susott because it found that he failed to exercise the proper degree of care in piloting a transport plane which crashed at the edge of the Lambert-St. Louis Airport, Robertson, Mo., on December 11, 1940.

The accident upon which the suspension order was based occurred as Susott attempted to land at the end of the first leg of a scheduled trip from Chicago, Ill., to Fort Worth, Tex. Susott's plane, which carried four passengers and a crew of three, stopped in a ditch running along one end of the airport rather than on the proper runway. No one was injured seriously but the plane was extensively damaged.

Decision Postponed On West Coast Run

Moved by a desire to accomplish the most economic and efficient development possible in the air transportation system on the West coast, the Civil Aeronautics Board has postponed final decision on United Air Transport Corporation's application for a nonstop service between Fresno and Sacramento, Calif., until it has heard and decided two other pending applications of Western Air Express Corporation and Transcontinental & Western Air, Inc., which involved proposed services paralleling to an extent the nonstop service proposed by United.

The Board denied the present application of United, stating that the issues raised by the Western Air Express and Transcontinental and Western Air cases definitely bear upon those raised by United's nonstop application. The Board's opinion stated that United would have the right to reopen its present proceeding "for further consideration of the questions here presented on the present record after the Board shall have reached a decision" in the two other cases.

- Keep 'Em Flying -

Trans-Pacific Air Mail Service

The combined air-mail service on F. A. M. routes 14 and 19 between the Pacific coast (San Francisco and/or Los Angeles) and Honolulu has been increased to three round trips a week, leaving the Pacific Coast each Sunday, Tuesday, and Thursday, the Post Office Department has announced. Also, the flight each second week to Auckland, New Zealand, via intermediate points, is leaving San Francisco and Los Angeles Thursday instead of Saturday. Both changes became effective August 7, 1941. There is no change in the schedule of the through flights on F. A. M. 14.

Plane on "Spare-Parts" Tour

The Civil Aeronautics Board has granted permission for a flight through the United States of an American-made plane of Panama registry which, according to the Panama government, is making a spare-parts shopping tour for the chief training officer of the Panama Air Corps.

According to the order granting permission, the plane, of the class known as "light planes," was to be piloted by Naron H. Lee, a United States pilot.

Private Flying

Radio Equipment "Do's" and "Don'ts" Listed by C. P. T. P.

Instructions for the proper installation and maintenance of radio equipment are contained in a recent maintenance bulletin issued by the Civil Aeronautics Administration which was sent to all flight contractors in the Civilian Pilot Training Program. The bulletin lists "do's" and "don'ts," and discusses precautions that should be taken after the radio has been installed. The full text of the bulletin follows:

Installation And Maintenance Of Radio Equipment

Radio equipment that is improperly installed and operated is a dangerous fire hazard, and the following "do's" and "don'ts" are listed in an effort to assist operators in the proper installation, maintenance, and operation of this equipment.

DON'T operate the transmitter or receiver in the hangar.

DON'T have any radio equipment turned on while gasoline is being put into the airplane.

DON'T permit anyone other than an aircraft radio technician to work on your aircraft radio equipment. An aircraft radio is designed and built for one particular purpose and should only be repaired by a person who is specialized in that type of radio equipment.

DON'T permit the drilling of any structural parts of the airplane for the attachment of mounting brackets without the approval of the C. A. A. or the airplane manufacturer.

DON'T use bonding of improper length on the control cables. Bonding that was too short has been installed on control cables and did not permit the full travel

of the cable. Bonding has been installed which was so long that it became entangled in the control cable pulley.

DON'T operate a radio when the gasoline tank is not properly bonded.

DON'T use unshielded wire on electrically operated flares. Since very little current is required to release these flares, shielded wires should be used and the shielding securely grounded.

Precautions That Should Be Taken

After your radio has been installed have a certified aircraft mechanic inspect the installation under the floor boards and any other place where wires or controls will be covered up. Installing a radio in an airplane, or changing the location of a radio, constitutes an alteration, and a Repair and Alteration Form No. 337 must be completed and submitted to a duly authorized representative of the Administrator for approval before the airplane is returned to service.

All radio controls should be clear of airplane controls and should not interfere with the airplane controls in any way.

Keep the shielding connections tight at all times. This will not only keep water out of the shielding but will eliminate ignition noise.

Keep antenna connections and ground connections clean and bright.

Check the floor boards for pockets and holes where microphone or controls that might become loose could fall through and possibly foul the airplane controls.

Keep the microphone cords short enough so that they will not get twisted and break, or become entangled with the airplane controls.

Be sure that the antenna is clear of any airplane or structure that might act as a ground when testing the radio before flight.

Study carefully pages 25 to 30 (inclusive) of PILOT'S RADIO MANUAL

Pilots Out of U. S. Aided In Certificate Renewal

United States pilots whose assignments keep them in foreign countries will not lose their civilian pilot certificates because of inability to secure the required periodic endorsement of a United States flight inspector, for the Civil Aeronautics Board has amended the Civil Air Regulations to make renewal of certificates in such cases relatively simple.

Pilot certificates are effective for definite periods; for example, commercial certificates are required to be endorsed each 6 months and private certificates every year. Until now a pilot whose absence from the country prevented him from proving that he had met the physical and experience requirements before the expiration date, faced loss of his certificate. Now a certificate doesn't expire until immediately upon return to the United States and all the pilot need do is to get an inspector to check his flying time, take the required physical examination and pass an examination on air traffic rules.

Full text of the amended regulation is on page 228.

CPT Planes Get Preference

A new priority plan designed to facilitate the production of civil aircraft for Civilian Pilot Training Schools and for other similar purposes has been announced by Priorities Director Edwin R. Stettinius of the Office of Production Management. Under the plan, a preference rating of A-10 will be assigned to 27 producers of aircraft and aircraft items. The rating may be used to speed delivery of material going into repair parts and accessories, as well as material going into new planes to be used for the purposes listed.

(Civil Aeronautics Bulletin No. 20), issued by Civilian Pilot Training.

We wish to caution you again against operating radio transmitters in the hangar. Serious fires and personal injuries have resulted from this practice.

TABLE A.—Mileage Flown per Accident and Fatality in Private Flying Operations

	1932	1933	1934	1935	1936	1937	1938	1939	1940
Miles flown	78,178,700	71,222,845	75,602,152	84,755,630	93,320,375	102,996,355	129,359,095	177,868,157	264,000,000
Number of accidents	1,951	1,603	1,504	1,517	1,698	1,917	1,882	2,175	3,446
Miles flown per accident	40,071	44,431	50,267	55,871	54,959	53,728	68,735	81,778	76,610
Number of fatal accidents	208	182	186	164	139	185	172	194	208
Miles flown per fatal accident	375,859	391,334	406,463	516,803	586,921	556,737	752,088	916,546	1,269,231
Pilot fatalities	167	154	148	134	130	152	141	161	183
Copilot and student fatalities	16	19	18	19	15	16	15	7	18
Passenger fatalities	133	129	151	100	119	112	115	139	124
Aircraft crew fatalities (other than pilot, copilot, or student)	1	5	4	4	6	2	1	4	3
Ground crew and third party fatalities	4	3	4	5	2	1	3	3	2
Total fatalities	321	310	325	282	272	283	275	314	330
Miles flown per pilot fatality	468,136	462,486	510,825	632,505	717,849	667,608	917,440	1,104,771	1,442,623
Miles flown per passenger fatality	587,810	552,115	500,677	847,556	784,205	1,009,768	1,124,862	1,279,627	2,129,032
Miles flown per fatality	243,547	229,751	232,622	323,495	343,090	363,945	470,397	566,459	800,000

(Other tables on pages 221, 222, and 223).

TABLE B.—Analysis of Causes of Accidents in Private Flying Operations for the Year 1940

Does not include aircraft damaged or destroyed in hangar fires, taxiing accidents where planes were not preparing to take off or after landing, etc.

[Causes of accidents indicated in percentages. For comparison with previous years see Civil Aeronautics Bulletin No. 3, Sept. 1, 1938, Air Commerce Bulletins, Vol. 10, Nos. 5 and 12, Nov. 15, 1938, and June 15, 1939, and Civil Aeronautics Journal, Vol. 1, No. 13, July 1, 1940.]

	Certificated aircraft and pilots ¹					Experimental and restricted ² certificated aircraft flown by certificated pilots					Uncertificated aircraft and certificated aircraft flown by uncertificated pilots					Grand total	
	Instructional	Experimental	Commercial	Pleasure	Total	Instructional	Experimental	Commercial	Pleasure	Total	Instructional	Experimental	Commercial	Pleasure	Total		
Number of accidents involved	1,422	18	321	1,443	3,204	1	10	34	4	49	52	6	13	122	193	3,446	
CAUSES																	
Personnel:																	
Pilots:																	
Error of judgment	8.80	5.56	13.41	15.27	12.15	0	6.00	13.82	25.00	12.86	10.77	0	12.31	17.34	14.60	12.31	
Poor technique	51.84	13.33	26.34	34.41	41.22	100.00	0	16.18	0	13.27	43.37	40.00	15.39	47.70	44.12	40.99	
Disobedience of orders or regulations	.07	0	0	.04	.05	0	0	0	0	0	0	0	0	1.06	.67	.08	
Carelessness or negligence	16.92	15.00	12.68	12.56	14.52	0	14.00	13.53	0	12.24	17.31	12.50	15.38	9.47	12.07	14.35	
Miscellaneous	.22	0	.94	.28	.32	0	0	0	0	0	0	0	0	.82	.52	.32	
Total pilot errors	77.85	33.89	53.37	62.56	68.26	100.00	20.00	43.53	25.00	38.37	71.45	52.50	43.08	76.39	72.07	68.05	
Other personnel:																	
Supervisory	.20	0	.14	.29	.24	0	0	0	0	0	0	0	0	7.69	0	.52	
Miscellaneous	.35	0	.79	.26	.35	0	10.00	0	0	2.04	0	0	0	0	0	.36	
Total personnel errors	78.40	33.89	54.30	63.11	68.85	100.00	30.00	43.53	25.00	40.41	71.45	52.50	50.77	76.39	72.59	68.66	
Airplane:																	
Power plant:																	
Fuel system	5.77	27.22	5.86	5.89	5.96	0	0	15.88	0	11.02	9.04	16.67	12.31	7.62	8.60	6.17	
Cooling system	0	0	0	.42	.19	0	0	1.77	0	1.22	0	0	0	.49	.31	.21	
Ignition system	.63	0	0	1.28	.86	0	10.00	0	0	2.04	2.69	0	0	.82	1.24	.90	
Lubrication system	.26	0	.31	.33	.29	0	0	2.94	0	2.04	0	0	0	.82	.52	.33	
Engine structure	.71	0	2.15	1.86	1.37	0	0	14.71	0	10.21	1.92	0	0	7.60	0	1.04	1.47
Propeller assembly	.14	5.55	.31	.28	.25	0	0	0	0	0	0	0	0	0	0	.23	
Engine control system	.22	0	.31	.10	.17	0	0	0	0	0	1.92	0	0	0	0	.52	.19
Miscellaneous	.48	0	0	.89	.61	0	0	2.94	0	2.04	0	0	0	.82	.52	.63	
Undetermined	1.87	16.67	3.55	4.20	3.17	0	0	5.88	75.00	10.21	5.77	0	15.38	1.64	3.63	3.30	
Total power plant failures	10.08	49.44	12.49	15.25	12.87	0	10.00	44.12	75.00	38.78	21.34	16.67	35.38	12.21	16.38	13.43	
Structural:																	
Flight control system	.30	0	0	.59	.40	0	0	0	0	0	0	0	0	0	0	.37	
Movable surfaces	.07	0	0	0	.03	0	0	0	0	0	0	0	0	0	0	.03	
Stabilizing surfaces	0	0	.31	.05	.05	0	10.00	0	0	2.04	0	0	0	0	0	.08	
Wings, struts and bracings	.49	5.56	.56	.81	.67	0	0	0	0	0	1.92	0	0	2.46	2.07	.74	
Undercarriage	1.59	0	5.17	2.12	2.18	0	10.00	2.94	0	4.08	0	0	3.08	2.46	1.76	2.18	
Retractable landing gear mechanism	0	0	.63	.14	.13	0	0	0	0	0	0	0	0	.82	.52	.15	
Wheels, tires and brakes	.28	0	2.57	1.45	1.04	0	0	0	0	0	0	0	0	.08	.05	.96	
Pontoons and hulls	0	0	.19	0	.02	0	0	0	0	0	0	0	0	0	0	.02	
Fuselage, engine mounts and fittings	.21	0	.31	.21	.22	0	0	0	0	0	0	0	0	0	0	.20	
Tail wheel or tail skid assembly	.07	0	.31	.17	.14	0	0	.88	0	.61	0	0	0	0	0	.14	
Miscellaneous	.25	11.11	.56	.30	.36	0	0	0	0	0	0	0	0	0	0	.34	
Undetermined	0	0	0	.14	.06	0	0	0	0	0	0	0	0	0	0	.06	
Total structural failures	3.26	16.67	10.61	9.98	5.30	0	20.00	3.82	0	6.73	1.92	0	3.08	5.82	4.40	5.27	
Handling qualities	0	0	.45	.07	.08	0	10.00	0	0	2.04	0	0	0	0	0	.10	
Instruments	0	0	.03	.13	.06	0	0	0	0	0	0	0	0	0	0	.06	
Total airplane failures	13.34	66.11	23.58	21.43	18.31	0	40.00	47.94	75.00	47.55	23.26	16.67	38.46	18.03	20.78	18.86	
Miscellaneous:																	
Weather	4.12	0	8.55	5.39	5.11	0	0	0	0	0	.58	0	0	2.05	1.45	4.83	
Darkness	.06	0	1.00	.62	.41	0	0	1.18	0	.82	0	0	0	.33	.21	.40	
Airport—water or terrain	3.29	0	10.54	8.01	6.12	0	0	7.35	0	5.10	4.71	14.16	3.08	2.38	3.42	5.96	
Other	.65	0	1.09	1.15	.92	0	10.00	0	0	2.04	0	0	0	0	0	.88	
Total miscellaneous causes	8.12	0	21.18	15.18	12.56	0	10.00	8.53	0	7.96	5.29	14.16	3.08	4.76	5.08	12.07	
Undetermined and doubtful	.14	0	.94	.28	.28	0	20.00	0	0	4.08	0	16.67	7.69	.82	1.55	.41	
Total percentages	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

¹ This involves accidents to aircraft and pilots certificated in accordance with Civil Air Regulations.

² This involves accidents to aircraft certificated only for restricted and special purposes in accordance with the Civil Air Regulations.

TABLE C.—Vital Statistics and Results of Accidents in Private Flying Operations for the Year 1940

Does not include aircraft damaged or destroyed in hangar fires, taxiing accidents where planes were not preparing to take-off or after landing, etc.

[For comparison with previous years see Civil Aeronautics Bulletin No. 3, Sept. 1, 1928, Air Commerce Bulletin, Vol. 10, Nos. 5 and 12, Nov. 15, 1938, and June 15, 1939 and Civil Aeronautics Journal, Vol. 1, No. 13, July 1, 1940.]

In- struc- tional	Ex- peri- men- tal	Certified aircraft and pilots ¹				Experimental and restricted ² certified aircraft flown by certified pilots				Uncertified aircraft and certified aircraft flown by uncertified pilots				Grand total		
		Com- mer- cial	Ple- a- sure	Total	In- struc- tional	Ex- peri- men- tal	Com- mer- cial	Ple- a- sure	Total	In- struc- tional	Ex- peri- men- tal	Com- mer- cial	Ple- a- sure	Total		
Number of accidents involving:																
Fatal injury	47	0	24	96	167	0	2	1	0	3	1	4	30	38	208	
Severe injury	54	1	22	94	171	1	1	3	0	5	1	1	13	15	191	
Minor injury	103	4	23	107	237	0	2	3	0	5	8	2	1	14	25	267
No injuries	1,218	13	252	1,146	2,629	0	5	27	4	36	40	3	7	65	115	2,780
Total accidents	1,422	18	321	1,443	3,204	1	10	34	4	49	52	6	13	122	193	3,446
I. Injury to personnel:																
Pilots:																
Certified	1,498	19	332	1,474	3,323	1	11	35	4	51	32	4	10	50	96	3,470
Uncertified	0	0	0	0	0	0	0	0	0	0	21	4	72	99	99	99
Fatal injury, class A	46	0	19	80	145	0	2	1	0	3	3	1	4	27	35	183
Severe injury, class B	53	1	17	79	150	1	1	3	0	5	1	0	11	12	167	167
Minor injury, class C	104	4	23	114	245	0	2	3	0	5	7	2	17	28	278	278
Uninjured, class D	1,295	14	273	1,201	2,783	0	6	28	4	38	42	3	8	67	120	2,941
Copilots or students:																
Fatal injury, class A	14	0	4	0	18	0	0	0	0	0	0	0	0	0	0	18
Severe injury, class B	24	0	2	7	33	1	0	0	0	1	0	0	1	1	1	35
Minor injury, class C	18	0	4	1	23	0	0	0	0	0	0	1	0	1	2	25
Uninjured, class D	294	3	25	27	349	0	1	3	0	4	1	0	0	2	3	356
Passengers:																
Fatal injury, class A	0	0	28	70	98	0	0	0	0	0	0	0	5	21	26	124
Severe injury, class B	0	0	14	68	82	0	0	0	0	0	0	0	0	10	10	92
Minor injury, class C	2	0	33	55	90	0	0	0	0	0	1	0	1	8	10	100
Uninjured, class D	24	15	290	734	1,063	0	1	0	1	2	0	0	9	23	32	1,097
Aircraft crew:																
Fatal injury, class A	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	3
Severe injury, class B	0	0	1	0	1	0	0	0	0	0	0	1	0	1	2	2
Minor injury, class C	0	0	2	0	2	0	1	2	0	3	0	0	0	0	0	5
Uninjured, class D	2	9	7	1	19	0	0	1	0	1	0	0	0	0	0	20
Ground personnel:																
Minor injury, class C	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Third parties ³ :																
Fatal injury, class A	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	2
Severe injury, class B	2	0	0	3	5	0	0	0	0	0	0	0	0	0	0	5
Minor injury, class C	0	0	0	1	1	0	0	0	0	0	1	0	0	0	1	2
Total injuries and noninjuries:																
Fatal injury, class A	61	0	52	151	264	0	4	1	0	5	3	1	9	48	61	330
Severe injury, class B	79	1	34	157	271	2	1	3	0	6	1	0	1	22	24	301
Minor injury, class C	125	4	62	171	362	0	3	5	0	8	9	3	3	26	41	411
Uninjured, class D	1,615	41	595	1,903	4,214	0	8	32	5	45	43	3	17	92	155	4,414
Total	1,880	46	743	2,442	5,111	2	16	41	5	64	56	7	30	188	281	5,456
II. Damage to material:																
Aircraft:																
Certified	1,571	19	340	1,511	3,441	1	11	36	4	52	21	0	5	56	82	3,575
Uncertified	1	0	0	1	2	0	0	0	0	0	34	6	11	60	120	122
Completely demolished, class A	116	3	38	190	347	0	4	6	1	11	11	1	5	48	65	423
Complete overhaul, class B	244	3	64	319	630	1	3	9	2	15	7	3	3	30	43	688
Major assembly repairs, class C	863	10	177	770	1,820	0	4	19	0	23	28	2	6	41	77	1,920
Minor repairs (see definition), class D	328	3	57	222	610	0	0	2	1	3	9	0	2	6	17	630
Not damaged (see definition), class E	21	0	4	11	36	0	0	0	0	0	0	0	0	0	0	36
III. Nature of accident:																
Collision (see definition), class A	16	1	1	2	20	0	1	0	0	1	0	0	1	0	1	22
Collision (see definition), class B	30	1	18	46	95	0	0	2	0	2	0	2	3	10	15	112
Spins or stalls (engine failure), class C	9	0	0	11	20	0	0	0	0	0	1	0	0	2	3	23
Spins or stalls (not engine failure), class D	63	1	16	87	167	0	1	1	0	2	3	1	1	28	33	202
Forced landings, class E	166	6	50	263	485	1	2	14	2	19	8	0	3	11	22	526
Landing accidents, class F	732	1	140	579	1,452	0	3	10	1	14	25	0	2	36	63	1,529
Take-off accidents, class G	155	6	41	262	464	0	1	3	1	5	6	3	2	22	33	502
Taxying accidents, class H	221	0	46	151	418	0	1	2	0	3	5	0	0	9	14	435
Fires in the air, class I	4	0	2	8	14	0	0	1	0	1	1	0	0	0	1	16
Structural failures, class N	16	2	2	23	43	0	1	0	0	1	2	0	0	2	4	48
Miscellaneous, class X	8	0	4	10	22	0	0	1	1	1	1	0	0	0	1	24
Indeterminate and doubtful, class Y	2	0	1	1	4	0	0	0	0	0	0	1	2	3	7	7

(Table C continued on next page)

Board Adopts New Part To Civil Air Regulations

A new Part 22 of the Civil Air Regulations, LIGHTER-THAN-AIR PILOT CERTIFICATES, has been adopted by the Civil Aeronautics Board. The new Part is contained in Amendment No. 127 to the CAR, and is to become effective on September 15, 1941.

Four grades of lighter-than-air pilot certificates are set forth—Student lighter-than-air pilot certificate; Private lighter-than-air pilot certificate; Commercial lighter-than-air pilot certificate; and Free balloon pilot certificate.

Those showing a valid need may obtain copies of the new part from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

New Aeronautical Publications

Among recent Government publications dealing with the subject of aeronautics are the following:

CONGRESSIONAL HEARINGS—STATE, COMMERCE, JUSTICE, AND FEDERAL JUDICIARY APPROPRIATION; hearings, 77th Congress, 1st session, on H. R. 4276, bill making appropriations for Department of State, Department of Commerce, Department of Justice, and the Federal Judiciary, for fiscal year ending June 30, 1942, and for other purposes; 286 pages. (Appropriations Committee, Senate.) Price 25 cents. Classification number Y 4.Apr6/2: S/2942.

CONGRESSIONAL HEARINGS—WAR DEPARTMENT APPROPRIATIONS; hearings, 77th Congress, 1st session, on H. R. 4183, making appropriations for the fiscal year ending June 30, 1942, for civil functions administered by the War Department and for other purposes. Price 15 cents. 133 pages. (Appropriations Committee, Senate.) Classification number Y 4.Apr6/2: W 19/942-2.

When ordering these publications, send remittance by postal money order, express order, coupons, or check to the Superintendent of Documents, Government Printing Office, Washington, D. C. Always give title, issuing office, or classification number when listed.

Manufacturing and Production

Plane Plants Need 580,000 Workers by November 1

Total employment in the aircraft industry (including subcontracting) will reach a peak of 580,000 workers in November of this year if present schedules are to be fulfilled, according to estimates of the Department of Labor.

This was contained in a publication ESTIMATED LABOR REQUIREMENTS FOR THE AIRCRAFT INDUSTRY UNDER THE NATIONAL DEFENSE PROGRAM, compiled by the Bureau of Labor Statistics.

On March 31, 1941, the aircraft industry employed 289,000 persons, and if the November estimate, based on the industry's present \$4,000,000,000 of orders, and excluding the labor requirements of the new bomber and Lend-Lease programs, is to be attained, the addition of 290,000 workers will be necessary, the report states.

"A rough estimate of labor requirements, including the additional bomber program not yet completely contracted for, indicates that during the 12 months from March 1941 to April 1, 1942, this figure of 290,000 new workers will have to be expanded to nearly 600,000 workers in all divisions of the industry. It is not improbable that before the end of 1942 the total number employed in the manufacture of aircraft will exceed 1,000,000 workers."

The Bureau points out that the introduction of mass production techniques and the necessity of "down-processing"

dictated by the shortage of skilled labor are reducing the proportion of skilled workmen required by the industry. As a result of these changes in technique the demand has increased for semi-skilled workers who can be trained in relatively brief periods, it adds.

The naturally protected interior of the country, which now has only 8 percent of the industry's air frame workers, has received 30 percent of all Government financial aid for plant expansion while the Pacific coast, with almost 60 percent of the airframe workers, has received only 29 percent of the aid, the Bureau continues. Engine plants on the Canadian border and in the interior, which now employ only 25 percent of that division's workers, have received 70 percent of the assistance allocated for plant expansion. A similar but less pronounced trend is observable in the propeller division of the industry.

"This geographic shift is bringing about new problems for those engaged either in the training of additional workers or the recruitment of those having the desired skills."

Turning to the production program, the Bureau states that during March 1941 the output of air frames, engines, and propellers was double that of October 1940.

"Present schedules call for more than double the March output by the end of 1941. With unplaced orders about equal in size to the \$4,000,000,000 already contracted for, additional facility building programs are now being planned, which will create a demand for labor in excess of that shown in this report," the Bureau declares.

TABLE C.—Vital Statistics and Results of Accidents in Private Flying Operation for the Year 1940—Con.

	Certificated aircraft and pilots ¹					Experimental and restricted ² certificated aircraft flown by certificated pilots					Uncertificated aircraft and certificated aircraft flown by uncertificated pilots					Grand total	
	Instructional	Experimental	Commercial	Pleasure	Total	Instructional	Experimental	Commercial	Pleasure	Total	Instructional	Experimental	Commercial	Pleasure	Total		
Miscellaneous information:																	
Fires after accident	3	0	7	10	20	0	0	1	0	1	0	0	0	4	4	425	
Propeller accidents to persons						22				1						4	427
Glider accidents to persons	6	0	2	3	11	2	1	1	2	6	3	2	0	4	9	626	
Parachute jumps (voluntary)	0	0	4	2	6	0	0	0	0	0	0	0	0	0	0	76	
Parachute jumps (involuntary)	9	2	1	3	15	0	2	1	0	3	0	0	0	0	0	18	

¹ This involves accidents to aircraft and pilots certificated in accordance with the Civil Air Regulations.

² This involves accidents to aircraft certificated only for restricted and special purposes in accordance with the Civil Air Regulations.

³ "Third parties" include spectators and any other persons who were not occupants of, or in any way connected with, the operations of the aircraft.

⁴ This figure covers the number of fires occurring after accident. Results are included in the above regular aircraft accident statistics under groups I, II, and III.

⁵ Passengers, 3 severe injuries occurring in accidents directly connected with flight operations. The results are included under groups I, II, and III. Also pilots, 2 severe injuries, 1 minor injury; students, 1 fatal injury, 2 severe injuries, 1 minor injury; aircraft crew, 1 minor injury; ground personnel, 3 severe injuries;

third parties, 3 fatal injuries, 7 severe injuries, 3 minor injuries. The results of these accidents are not included under groups I, II, and III as they did not occur in connection with flights.

⁶ Pilots, 8 fatal injuries, 6 severe injuries, 2 minor injuries, 11 uninjured (1 made inv. jump); student, 1 severe injury; passengers, 1 severe injury, 1 uninjured; ground personnel, 1 fatal injury. Results are not included under groups I, II, and III.

⁷ Voluntary parachute jumpers, 5 fatal injuries and 1 severe injury. Results are not included under groups I, II, and III.

⁸ Pilots, 1 severe injury, 4 minor injuries, 9 uninjured; students, 1 severe injury, 1 uninjured; passenger, 1 uninjured; aircraft crew, 1 minor injury. The results are included under groups I, II, and III.

AIRWAYS FACILITIES IN THE UNITED STATES

1932-1942

AS OF JUNE 30

EXPENDITURES - OPERATION AND MAINTENANCE

1932	\$ 6,991,226
1933	\$ 5,034,212
1934	\$ 4,300,781
1935	\$ 4,044,944
1936	\$ 4,095,401
1937	\$ 4,467,514
1938	\$ 5,197,391
1939	\$ 6,957,468
1940	\$ 9,027,716
1941	\$ 11,014,939 *
1942	\$ 13,059,024 *

FEDERAL AIRWAYS

1932	8,346 MILES
1933	8,315 MILES
1934	17,315 MILES
1935	20,769 MILES
1936	22,546 MILES
1937	21,782 MILES
1938	22,834 MILES
1939	24,244 MILES
1940	28,745 MILES
1941	30,913 MILES
1942	33,069 MILES

TELETYPE COMM WEATHER REPORTING

1932	3,000 MILES
1933	10,000 MILES
1934	11,114 MILES
1935	12,739 MILES
1936	13,181 MILES
1937	13,780 MILES
1938	21,790 MILES
1939	23,658 MILES
1940	27,046 MILES
1941	29,422 MILES
1942	56,472 MILES

TELETYPE COMM TRAFFIC CONTROL

1938	3,783 MILES
1939	10,676 MILES
1940	11,880 MILES
1941	13,292 MILES
1942	18,360 MILES

TELETYPE STATIONS

1932	233
1933	232
1934	210
1935	201
1936	210
1937	218
1938	298
1939	332
1940	368
1941	414
1942	492

RADIO RANGE STATIONS (WITH SCHEDULED BROADCAST)

1932	60
1933	68
1934	70
1935	75
1936	72
1937	73
1938	77
1939	79
1940	82
1941	85
1942	91

RADIO RANGE STATIONS (INCLUDING THOSE WITH VOICE COMM.)

1932	69
1933	108
1934	117
1935	119
1936	140
1937	164
1938	189
1939	238
1940	274
1941	290
1942	307

RADIO MARKER BEACONS

1932	63
1933	70
1934	78
1935	55
1936	56
1937	55
1938	53
1939	49
1940	42
1941	38
1942	38

U.H.F. FAN MARKERS

1939	20
1940	45
1941	119
1942	174

U.H.F. RADIO RANGE STATIONS

1940	2
1941	8
1942	70

* CONTAINS PACIFIC ISLANDS FUNDS

** MAINTENANCE COST FIGURE REPRESENTS FULL YEAR OPERATION OF FISCAL YEAR 1941 FACILITIES

AIR MAIL & PASSENGER ROUTES NOT EQUIPPED WITH AIR NAVIGATION FACILITIES

1932	9,600 MILES
1933	9,600 MILES
1934	6,200 MILES
1935	6,000 MILES
1936	6,200 MILES
1937	7,700 MILES
1938	10,200 MILES
1939	12,000 MILES
1940	12,000 MILES
1941	5,700 MILES

Airways

(Continued from page 217)

Greenville, S. C.	Muskegon, Mich.
(L)	(L)
Lincoln, Nebr. (L)	Battle Creek, Mich.
Montpelier, Vt.	(L)
(L)	Houlton, Maine,
Rochester, Minn.	(L)
(L)	(L)
Salt Flat, Tex.	Ogden, Utah (L)
(L)	

(A) Vertical antenna type, simultaneous radio range and communication station.

(L) Loop antenna type, radio range and communication station.

Another important phase of the 1941 fiscal-year program was the provision for 43 ultra-high-frequency fan-type markers. Surveys have been made and sites leased for all these markers. Work is about 80 percent finished on the construction of buildings, counterpoises, fences, driveways, etc. The remainder of the work is rapidly being completed.

The experimental operation of 8 ultra-high-frequency radio ranges for which preparations had been made last year has afforded much valuable information which is being used in the formulation of plans for the establishment of 57 additional ranges of this type during the coming fiscal year.

New Landing Systems

The development of radio landing systems was advanced with the awarding of contracts for the installation of six such systems at the following municipal airports: LaGuardia Field, N. Y.; Chicago, Ill.; Los Angeles, Calif.; Fort Worth, Tex.; Kansas City, Mo.; and Cleveland, Ohio. This was preceded by intensive preliminary investigations and tests, field surveys, selection of runways, negotiation of permits, leases, and arrangements with the airport authorities.

There have been unavoidable delays in the delivery of all radio approach system equipment, especially the portable test set. Consequently the C. A. A. has been unable to complete field tests and begin installation of equipment. At the Washington National Airport and the Oakland, Calif., Municipal Airport there will be installed two sets of equipment used at Indianapolis for tests and development work and now being modernized. At the Washington Airport construction of buildings, counterpoise units, and installation of service lines is well along. Officials expect the system to be functioning this fall, at least for trial.

Surveys are in progress at eight other airports where radio approach systems will be installed as an extension of the present program, according to plans for the fiscal year 1942.

Contracts have been awarded for six projects included in the national defense program for the development of landing areas, and construction has begun on five of them. New airports are being built at Rock Springs, Wyo.; Gardner,

Airways and Airports

Aeronautical Charts

During July the following new editions of aeronautical charts were issued by the United States Coast and Geodetic Survey. Pilots are warned that the previous editions of the same charts are canceled and now are obsolete.

Regional and direction-finding (DF) charts are sold for 40 cents each, while sectional charts are 25 cents each. On orders grossing \$10 or more, a 33 1/3 percent discount is allowed. Copies of these charts may be obtained from the Coast and Geodetic Survey, Washington, D. C., and from recognized dealers at major cities and airports.

New Alaska Aeronautical Chart

Nome, April 1941. Size, 24 by 34 inches. Located in latitude 62°-66°40' N., longitude 154°-172° W., an area of about 190,000 square miles. Lithographed in 12 colors showing names of topographic features in black; contours in brown; roads and trails in purple; water areas in blue; airports, isogonic lines and radio facilities in red; radio ranges in pink; and elevations in four tints.

New Editions of Sectional Aeronautical Charts

Bellingham, June 1941. Size, 20 by 37 inches. Located in latitude 48°-50° N., longitude 120°-126° W., an area of about 45,000 square miles. Canadian radio ranges realigned and civil airways added in Canada.

Cleveland, June 1941. Size, 20 by 42 inches. Located in latitude 40°-42° N., longitude 78°-84° W., an area of about 51,000 square miles. Radio ranges realigned at Columbus and Cleveland and civil airways revised.

Douglas, July 1941. Size, 20 by 47 inches. Located in latitude 30°-32° N., longitude 108°-114° W., an area of about 57,000 square miles. Accumulation of changes since last edition.

Kans.; and *Del Rio*, Tex. At Youngstown, Ohio, and Grand Forks, N. Dak., complete lighting systems are being installed. The Los Angeles Municipal Airport will get contact lights as soon as the city clears up property title.

Development in the Pacific

The extension of airways in the Pacific area has shown considerable progress in the face of many difficulties. The Palmyra Island and Johnson Island communication stations are near completion. The necessity for constructing living quarters has caused some delay. Engineering surveys have been prepared for communication stations at Howland and Canton Islands, and for the radio range facilities at Midway and Wake Islands. Construction material for these projects has been assembled at Honolulu. Shipment has been delayed because of the difficulty of arranging transportation to the remote localities. Funds for the Howland and Canton facilities were included in national defense appropriations, while funds for the Wake and Midway radio range stations were trans-

Duluth, June 1941. Size, 20 by 38 inches. Located in latitude 46°-48° N., longitude 90°-96° W., an area of about 47,000 square miles. Accumulation of changes since last edition.

Glacier Park, June 1941. Size, 20 by 37 inches. Located in latitude 48°-50° N., longitude 108°-114° W., an area of about 45,000 square miles. Civil airways added and accumulation of changes since last edition.

Kootenai, June 1941. Size, 20 by 37 inches. Located in latitude 48°-50° N., longitude 114°-120° W., an area of about 45,000 square miles. Addition of Kibberly radio range. Civil airways added in Canada and accumulation of other changes since the last edition.

La Grande, July 1941. Size, 20 by 39 inches. Located in latitude 44°-46° N., longitude 114°-120° W., an area of about 47,000 square miles. Controlled civil airways revised and accumulation of changes since last edition.

Lake Superior, June 1941. Size, 20 by 38 inches. Located in latitude 46°-48° N., longitude 84°-90° W., an area of about 47,000 square miles. Accumulation of changes since last edition.

Lincoln, June 1941. Size, 20 by 41 inches. Located in latitude 40°-42° N., longitude 96°-102° W., an area of about 51,000 square miles. Accumulation of changes since last edition.

Pocatello, July 1941. Size, 20 by 40 inches. Located in latitude 42°-44° N., longitude 108°-114° W., an area of about 49,000 square miles. Accumulation of changes since last edition.

Salina, July 1941. Size, 20 by 43 inches. Located in latitude 38°-40° N., longitude 96°-102° W., an area of about 52,000 square miles. Addition of radio range at Hutchinson and accumulation of changes.

Tulsa, July 1941. Size, 20 by 44 inches. Located in latitude 36°-38° N., longitude 90°-96° W., an area of about 53,000 square miles. Chanute radio range realigned and accumulation of changes since last edition.

Twin Cities, July 1941. Size, 19 by 39 inches. Located in latitude 44°-46° N., longitude 90°-96° W., an area of about 47,000 square miles. Radio ranges realigned at LaCrosse and Alexandria.

ferred to the C. A. A. from the Navy Department.

National defense appropriations also included funds for the establishment of high-powered receiving and transmitting stations at New Orleans, La., and Honolulu. Preparations for these facilities, including field surveys, negotiation of leases and the assembling of materials, have been completed. At Honolulu the clearing of sites and other preliminary work has been started. Proposals and specifications have been issued to obtain bids for the construction of buildings and antenna at New Orleans.

These transmitting and receiving stations will fit into the defense picture by supplementing high-powered stations now operating at New York, Seattle, and Anchorage, Alaska. They will be capable of conducting two-way radio communications for the transmission of meteorological information relating to aircraft movements, direct communication with aircraft operated on trans-

(See AIRWAYS, page 228)

Air Safety

Careless Pilots Cause False Alarms In not Reporting Flight Plan Change

Forethought Will Avoid Expensive Searches

Failure to cancel a flight plan or to report changes in destination not only reflects carelessness on the part of the pilot but causes many false alarms to be sent out, thus starting emergency forces on a "wild goose" chase.

This is the reminder carried in a recent bulletin issued by the Civil Aeronautics Board, which urged pilots: "When you file a flight plan, be sure to report as soon as possible any change in the plan. * * * Always send an arrival message to the point of departure."

The full text of the bulletin follows:

Don't Be a False Alarmist

Through failure to follow through PX messages, irresponsible, inconsiderate or forgetful pilots cause many false alarms to be sent out. These result in expensive searches and unnecessary cluttering of air communication facilities.

State police, airports, and other communication stations pick-up the "destination" messages sent out by pilots enroute. When no arrivals are announced, because of failure to cancel, or because of unannounced changes in destination, emergency forces go on a "wild goose" chase. As the deputy chief inspector of one of the state police organizations put it, "This has the same effect as the old legend of the boy who cried 'Wolf,' for it may be some day that when a pilot is desperately in need of help, he may fail to get it because the police will have grown tired of spending their time and effort to discover that the pilot is safe at home in bed."

When you file a flight plan, be sure to report as soon as possible any change in the plan. If a communication station is not at either of the proposed terminals, a telegram should be dispatched to the airport or interested parties. Always send an arrival message to the point of departure.

[INDIVIDUAL ACCIDENT REPORTS]

Physical Fatigue Contributes to Fatal Accident

An accident which occurred approximately 54 miles south of Clovis, N. Mex., on September 2, 1940, resulted in fatal injury to private pilot Thomas Coker,

Jr., and major damage to the aircraft. Coker had logged nearly 175 hours solo flight time in the type of airplane involved, which was an Aeronca, Model 65 L-A.

The plane piloted by Coker took off from the Clovis Airport early on the morning of the accident and was observed by witnesses shortly before 7:00 o'clock as it was flying south at an altitude of between 1,500 and 2,000 feet in the vicinity of Sawyer's Ranch, about 55 miles south of Clovis. When first seen, the airplane was flying straight and level and proceeding in a southerly direction. The ship was then observed to circle to the left in a shallow bank. Witnesses state that the airplane completed three circles to the left, with power on, the angle of bank progressively increasing until the aircraft was in a steep banked attitude. The plane lost altitude during these turns until, upon completion of the third circle, the left wing tip contacted the ground, cartwheeling the airplane over its nose onto its right wing. The wreckage came to rest about 75 yards from the point of first contact with the ground. Both propeller blades were broken at the hub by contact with the ground and splinters were thrown approximately 25 yards to each side of this point of impact, indicating that the engine was developing appreciable power at the time of impact.

The terrain surrounding the scene of the accident was suitable for landings for a distance of approximately 5 miles in all directions, had there been a necessity for an emergency landing. Investigation failed to reveal evidence of engine or structural failure or evidence of the malfunctioning of the controls. The gasoline tank was ruptured upon impact.

A check of the pilot's activities shortly before the accident reveals that he made a flight to a point 150 miles from Clovis on August 31, and had only about 3 hours' sleep that night. On September 1, he flew back to Clovis where he worked all day at the Clovis Airport, then remained up with friends until 5 a. m. on September 2. This evidence indicates that the pilot had been without an adequate amount of sleep for over 48 hours. Some evidence was also obtained that the pilot had suffered from occasional heart attacks and that he had been forced to discontinue a trip by automobile a short time previously in order to recover from a heart attack which he had suffered during the trip. The medical records of the examination of this

pilot, however, indicate that he was physically qualified to fly. This is also substantiated by the records of the Medical Section of the United States Army Air Corps which disclosed that this man had been examined in January of 1940, and had been found physically fit to fly. Favorable flight weather prevailed at the time of the accident.

Probable cause.—Failure of pilot to effect recovery from a left spiral.

Contributing factor.—Physical fatigue of the pilot.

Spin Follows Pylon Eights

An accident which occurred about 1½ miles northwest of the Hastings Municipal Airport, Hastings, Nebr., about 11:45 p. m. on October 7, 1940, resulted in fatal injury to Ray Beebe and serious injury to James Smith.

The Ryan airplane, Model ST-A, owned by Beebe, received major damage. Beebe held a commercial pilot certificate with 1 Land, 2S Land, and instructor ratings. He had accumulated approximately 2,300 flying hours. Most of the 300 hours flown by him during the preceding 90 days had been as flight instructor. Smith held a private pilot certificate and was 1 of 20 students being trained by Beebe under the necessary program of the Civilian Pilot Training Service.

Prior to the accident, pylon figure eights were being practiced at an altitude of about 500 feet. Witnesses who observed the flight state that two figure eights had been completed and the airplane was in a steep banked attitude as it turned around a pylon in the third maneuver when the nose was seen to drop. The airplane then rotated abruptly around its longitudinal axis in a steep right banked attitude and fell off into a right power spin which continued until it struck the ground on its nose and right wing.

Subsequent investigation revealed that Pilot Beebe had held an instructor's rating for several years and had been re-rated on April 20, 1940. He was appointed a primary flight examiner on April 29, 1940, and was designated as a secondary flight instructor on August 5, 1940. He also was later appointed a secondary flight examiner. Beebe was conducting the final flight test of Pilot Smith in the secondary progress of the Civilian Pilot Training Service. Examination of the wreckage failed to disclose any evidence of structural or power plant failure, or of malfunctioning of the control system. Although Beebe had flown only a total of about 10 hours in the front seat of this model aircraft, he had completed the secondary instructor's flight training course conducted at Kansas City, Mo., in an aircraft of the same model. He received this flight training while flying from the rear seat.

Probable cause.—Pilot lost control of the aircraft while performing figure eights at a low altitude.

CIVIL AERONAUTICS BOARD

OFFICIAL ACTIONS

Abstracts of Opinions, Orders, and Regulations

FOR THE PERIOD AUGUST 1-15, 1941

ORDERS

ORDER No. 1169 *August 1, 1941*

Approved a modification of a resolution of the Air Traffic Conference of America (Contract C. A. B. 173-A) relating to advertising in designated publications.

ORDER No. 1170 *August 1, 1941*

Approved resolution of the Air Traffic Conference of America (Contract C. A. B. No. 189) covering uniform advertising practices.

ORDER No. 1171 *July 22, 1941*

Granted application of British Overseas Airways Corporation for amendment of its foreign air carrier permit authorizing the use of the port of Baltimore, Md., instead of the port of New York, N. Y., as the United States terminal in its proposed trans-Atlantic service. (Opinion and order—Docket No. 618.) (Signed by the President, July 31.)

ORDER No. 1172 *August 1, 1941*

Adopted an order fixing and determining the fair and reasonable rate of compensation for the transportation of mail by Northwest Airlines, Inc., over Route No. 45. (Opinion and order—Docket No. 407.)

ORDER No. 1173 *August 4, 1941*

Granted Stinson Aircraft Division of Vultee Aircraft, Inc., permission to sell to American Airlines, Inc., such repair parts as are required for the proper maintenance and safe operation of the Stinson "Reliant" aircraft now owned by American Airlines.

ORDER No. 1174 *August 5, 1941*

Granted application of the Colombian Petroleum Co. for permission for the flight of an aircraft bearing Colombian identification marks into, over, and away from the Canal Zone and in the territory of the United States, subject to certain terms and conditions.

ORDER No. 1175 *August 5, 1941*

Granted application of Colombian Petroleum Co. for an amendment of the "Authorization to Navigate Foreign-registered Aircraft in the United States and in the Canal Zone" issued to it on May 15, 1941.

ORDER No. 1176 *August 5, 1941*

Granted application of Naron H. Lee for permission to fly an aircraft bearing

Republic of Panama identification marks in the continental United States subject to certain terms and conditions.

ORDER No. 1177 *August 8, 1941*

Revoked private pilot certificate No. 13675-40, held by Ernest B. Smith, Long Beach, Calif., for piloting an aircraft aerobatically carrying a passenger when they were not equipped with parachutes and other violations of the Civil Air Regulations.

ORDER No. 1178 *August 8, 1941*

Approved a resolution of the Air Traffic Conference of America (Contract C. A. B. No. 151) relating to issuance of passes to conference representatives and committee members.

ORDER No. 1179 *August 8, 1941*

Approved interlocking relationships held by Leo T. Crowley and Pan American Airways et al.

ORDER No. 1180 *August 8, 1941*

Approved interlocking relationships held by Wm. McEvoy and Pan American Airways, et al.

ORDER No. 1181 *August 11, 1941*

Suspended for a period of 15 days airline transport pilot certificate No. 12163 held by Herbert W. Susott, for failure to exercise a reasonable degree of care, precaution and vigilance, while attempting to land an aircraft.

ORDER No. 1182 *August 12, 1941*

Revoked student pilot certificate No. S-203466, held by George A. Maricle, Long Beach, Calif., for piloting an aircraft carrying passengers other than certificated instructors and other violations of the Civil Air Regulations.

ORDER No. 1183 *August 12, 1941*

Revoked the air agency certificate of Lyon Air Service (No. 205) operated by John H. Lyon, South San Francisco, Calif., for permitting operation of an aircraft while said aircraft was not in condition for safe operation and other violations of the Civil Air Regulations.

ORDER No. 1184 *August 12, 1941*

Approved an agreement (Contract C. A. B. No. 193) between Western Air Lines, Inc., and United Air Lines Transport Corporation for the temporary loan of airplanes for emergency use.

ORDER No. 1185 *August 11, 1941*

Denied application of United Air Lines Transport Corporation for au-

thority to inaugurate non-stop service between Fresno, Calif., and Sacramento, Calif., on route No. 11. (Opinion and order—Docket No. 517.)

ORDER No. 1186 *August 13, 1941*

Dismissed for lack of prosecution application of Deutsche Zeppelin Reederel, G. m. b. H., for an order authorizing air transportation of persons, property, and mail between Frankfurt-on-Main, Germany, and Lakehurst, N. J., and/or Opa Locka, Fla.

ORDER No. 1187 *August 13, 1941*

Instituted a proceeding for fixing and determining fair and reasonable rates of compensation for transportation of mail by Transcontinental & Western Air, Inc., over routes Nos. 36, 37, 38, and 44, and consolidated it with the proceeding to determine rate of compensation for the transportation of mail over route No. 2.

ORDER No. 1188 *August 14, 1941*

Granted application of All American Aviation, Inc., to rearrange points in its certificate of public convenience and necessity for route No. 49; granted amendment of its certificate authorizing transportation of property and mail to and from Lewistown, Carlisle, and Shippensburg, Pa.; denied application for a certificate authorizing transportation of property and mail to and from Mechanicsburg, Newport, and Newville, Pa., and Ripley, W. Va.; and dismissed investigation to determine the necessity of air transportation to and from Athens, Ohio. (Opinion and order—Docket No. 470 et al.)

ORDER No. 1189 *August 14, 1941*

Dismissed petition of the city of Athens, Ohio, requesting that it be included as an intermediate point on route No. 49 served by All American Aviation, Inc.

ORDER No. 1190 *August 14, 1941*

Approved application of Braniff Airways, Inc., for authority to inaugurate nonstop service between Dallas, Tex., and Kansas City, Mo., on route No. 9. (Opinion and order—Docket No. 613.)

ORDER No. 1191 *August 15, 1941*

Consolidated into one proceeding applications of Caribbean-Atlantic Airlines, Inc., and Aerovias Nacionales De Puerto Rico, Inc., for certificates of convenience and necessity authorizing air transportation in Puerto Rico and the Virgin Islands.

ORDER No. 1192 *August 15, 1941*

Revoked student pilot certificate No. S-76391 held by Charles G. Pommitz for piloting an aircraft aerobatically at an altitude of less than 1,500 feet and other violations of the Civil Air Regulations.

REGULATIONS

REGULATION No. 175 *August 1, 1941*

Adopted Amendment No. 123 of the CAR, DESIGNATION OF YOUNGSTOWN MUNICIPAL AIRPORT and WASHINGTON NATIONAL AIRPORT as CONTROL AIRPORTS, amending section 60.21. The full text follows:

Effective August 15, 1941, section 60.21 of the Civil Air Regulations is amended as follows:

1. By inserting the words "Youngstown, 0. Youngstown Municipal Airport (Vienna)," immediately following the words "Wichita, Kans. Wichita Airport."

2. By striking the words "Washington Airport" and inserting in lieu thereof the following:

"Washington National Airport."

REGULATION No. 176 *August 1, 1941*

Adopted Amendment No. 124 of the CAR, REDESIGNATION OF AIRWAY TRAFFIC CONTROL AREAS, AMERICAN CIVIL AIRWAY NO. 6, amending section 60.2415. Full text follows:

Effective August 15, 1941, Part 60 of the Civil Air Regulations is amended as follows:

1. By amending section 60.2415 to read as follows:

"**60.2415** *Amber civil airway No. 6 airway traffic control areas (Jacksonville, Fla., to U. S.-Canadian border).*—Those portions of amber civil airway No. 6: From a line extended at right angles across such airway through a point on the center line thereof 25 miles northwest of the Alma, Ga., radio range station, to the U. S.-Canadian border."

REGULATION No. 177 *August 5, 1941*

Adopted Special Regulation Regarding Air Traffic Control in Washington National Airport Control Zone. Full text follows:

"Aircraft taking-off from any landing area in the Washington National Airport control zone, other than Bolling Field or the Naval Air Station, shall obtain authorization from the air-traffic control-tower operator on duty in the airport control tower at the Washington National Airport prior to such take-off."

REGULATION No. 178 *August 5, 1941*

Adopted Amendment No. 125 of the Civil Air Regulations, PRIVATE PILOT AERONAUTICAL KNOWLEDGE REQUIREMENT, amending Section 20.125. The full text follows:

Effective October 1, 1941, section 20.125 of the Civil Air Regulations is amended to read as follows:

"**20.125** *Aeronautical knowledge.*—Applicant shall be familiar with and accomplish satisfactorily a written examination covering so much of the provisions of Parts 01, 20, and 60 as are pertinent to his certificate, prevailing weather conditions in the United States as encountered in flying, and the forecasting thereof, the analyzing of weather maps and sequence reports as furnished by the United States Weather Bureau, practical air navigation problems and the use of maps, navigation by terrain (pilotage) and by dead reckoning, including the use of instruments and other aids to navigation in visual contact flying, and the general servicing and operation of aircraft."

REGULATION No. 179 *August 5, 1941*

Adopted Amendment No. 126 of the Civil Air Regulations, CERTIFICATES OF PILOTS ABSENT FROM THE UNITED STATES,

amending Part 20 by adding new section 20.7. The full text follows:

Effective August 5, 1941, Part 20 of the Civil Air Regulations is amended by adding a new section 20.7 to read as follows:

20.7 *Absentee pilot certificates.*—

20.70 *Duration.*—Notwithstanding any other provision of this Part, a pilot certificate, the holder of which is absent from the United States for the 45 days immediately preceding the termination of the endorsement period designated on the certificate, may be continued in effect thereafter without an endorsement by an inspector of the Administrator upon conformance with the provisions of this section, except that such certificate shall, in all cases, immediately expire upon the return of the holder to the United States.

20.701 Such certificate shall continue in effect for a period of 12 months from the termination of the endorsement period if the holder thereof, within the 45-day period preceding such termination, shall mail, or there shall have been received by the Administrator:

(1) A statement of the holder certifying that he has logged 15 hours of solo flight time within the 12 months preceding the termination of the endorsement period in aircraft of the type which he was rated to pilot; and

(2) A statement by a person, who is authorized by the government of the country wherein the holder is temporarily residing to give pilot physical examinations to nationals of that country, certifying that the holder has satisfactorily passed the physical examination prescribed by that country for pilots of equivalent grade within the 90 days preceding the termination of the endorsement period.

20.701 A pilot certificate continued in effect in accordance with § 20.700 may be continued in effect for additional periods of 12 months each, if the holder thereof, within 45 days preceding the termination of each period, shall mail, or there shall have been received by the Administrator, the statements prescribed in § 20.700.

20.71 *Special issuance: Expired certificates of absentee pilots.*—

20.710 *Upon return of pilot to the United States.*—The holder of an expired pilot certificate, which has expired in accordance with the provisions of this section upon his return to the United States, may obtain a new certificate of the same grade and ratings previously held if within 90 days of such return he makes application to an inspector of the Administrator and shows that, within the 12 months immediately preceding the date of such application, he has logged 15 hours of solo flight time in aircraft of the type which he was rated to pilot, and that, within 60 days preceding the date of application, he has satisfactorily accomplished the physical examination required for endorsement of his certificate: *Provided, however, no certificate shall be issued if such person has been absent from the United States for a period of more than one year until he has satisfactorily accomplished a written examination on the provisions of the Civil Air Regulations which may be pertinent to the certificate and ratings applied for; And Provided further, that no new certificate of limited commercial grade shall be issued on or after May 1, 1942.*

20.711 *Pilots within the United States.*—The holder of an expired pilot certificate which has expired since August 1, 1939, because of his failure to obtain an endorsement by an inspector of the Administrator due to his absence from the United States during the period in which such endorsement could have been obtained, and who has since returned to the United States, may obtain a new pilot certificate of the same grade and ratings previously held if he makes application to an inspector of the Administrator prior to November 1, 1941, and shows that he has logged the flight time and has passed the examinations required in § 20.710.

20.712 *Pilots absent from the United States.*—The holder of a pilot certificate which has expired since August 1, 1939, or which may expire before February 1, 1942, who is absent from the United States, and whose certificate has expired because of his failure to obtain an endorsement by an inspector of the Administrator due to his absence from the United States during the period in which such endorsement could have been obtained, may obtain a new pilot certificate of the same grade and ratings previously held by mailing

or upon receipt by the Administrator, prior to February 1, 1942:

(1) A statement of the pilot certifying that during the 12 months immediately preceding the date of such statement he has logged 15 hours of solo flight time in aircraft of the type which he was rated to pilot; and

(2) A statement by a person, who is authorized by the government of the country wherein the holder is temporarily residing to give pilot physical examinations to nationals of that country, certifying that the holder has satisfactorily passed the physical examination prescribed by the regulations of that country for pilots of equivalent grade. This certificate shall continue in effect for a period of 12 months from the date of issuance and may be continued in effect thereafter for additional 12-month periods if the holder remains continuously absent from the United States and, within the 45 days preceding the termination of each period shall mail, or there shall have been received by the Administrator, the statements required in this subsection, except that such certificate shall immediately expire upon the return of the holder to the United States."

REGULATION No. 180 *August 15, 1941*

Adopted Amendment No. 127 of the CAR, adding a new Part 22, LIGHTER-THAN-AIR PILOT CERTIFICATES, and amending sections 20.0 and 60.50. The full text of the amendment may be obtained from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

Airways

(Continued from page 225)

oceanic routes, as well as direct communication with locations in Newfoundland, Europe, South America, Alaska, and other areas in the Atlantic, Caribbean, and Pacific.

Radio transmission and receiving equipment is now being installed in a high-powered communication station at San Francisco, Calif., construction work on which is just about finished. This facility has separate receiving and transmitting units, and is similar to the high-powered communication station operating on the East coast. The station will be operated by remote control from Mills Field, San Francisco, and it is being equipped for direct communication with Alaska, Honolulu and the Pacific area, New Orleans, and other points. It will form the key station in the communication network extending over the West coast, Alaska, and the Pacific area.

In Alaska difficulties have arisen leading to a revision of previous plans in order to coordinate the regular C. A. A. program with the defense needs of the military services. On the one hand, the program for establishment of air navigation facilities has been extended and the C. A. A. has undertaken all of the major airport projects included in the program for the development of landing areas for national defense. On the other hand, limited transportation facilities and a shortage of skilled labor have presented acute problems.

Nine radio range and communication facilities, 13 point-to-point communication stations, and 3 landing fields were in operation, and several other facilities were nearing completion, at the end of the fiscal year.

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